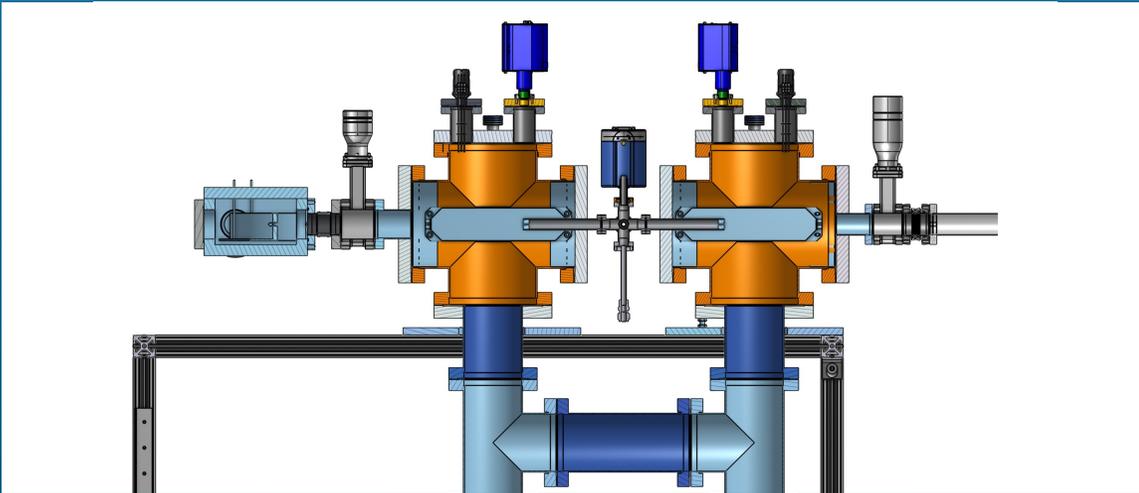


Ion energy analyzer (IEA) - Princeton, NJ

Princeton Plasma Physics Laboratory

Measure the energy of ions in warm or hot plasmas or ion beams



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Key References/Links	P. Beiersdorfer, et al., Rev. Sci Instr. 58 , 2092 (1987), https://doi.org/10.1063/1.1139469 .
	A. Ranjan, et al., J. Vac. Sci. Tech. A 24 , 1839 (2006), https://doi.org/10.1116/1.2244537 .



Key Properties

Physical Property to be Measured	Ion energies: 0.05–5 keV
Technique	Stripping cell to form ions of escaping charge-exchange neutrals, followed by an ion energy analyzer
Plasma parameter range	Size: 1-30 cm, Ion energy 0.05–5 keV, line density to 10^{14} cm ⁻²
Resolution (time)	<0.1 ms
Resolution (space)	1 cm
Resolution (energy)	10%
Interface	Channeltron detector, followed by pre-amplifier, amplifier, and information storage and processing equipment. Computer control of IEA instrument.
Suitable for MCF, ICF, MIF?	MCF, ion beams
Form factor: transport	0.5m x 2m x 2m, 300 lbs
Form factor: Power	300 W
Set-up time	2 days
Minimum time for complete machine parameter scans	For a time resolution of 5 ms and one line-of-sight, 20 seconds of cumulative plasma time per machine condition.
Minimum plasma duration or # of pulses for a good measurement	One second of plasma time for a time resolution of 0.1 seconds.
Other characteristics	Gas supply line (2 sccm), exhaust line for pumps are needed, synchronization with plasma, local control of SC-IAE.